2. Amber

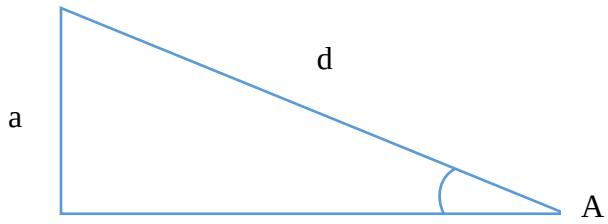
Program Name: Amber.java **Input File: amber.dat**

Amber is on the vacation of a lifetime. She and her family have gone skiing in Aspurwolfhorn, Colorado. At the resort there are a variety of chair lifts that take the skiers up the mountain to the different slopes. At the foot of each lift there is a sign that shows the angle of ascent and the distance travelled for that lift. To ski some of the slopes a skier must take more than one lift to get to the top of a slope and then ski down. Amber has become curious about how high each lift goes and what the altitude change is for the slopes she is skiing on. Aspurwolfhorn resort has not posted altitude signs so Amber is going to have to calculate the altitude change herself. She makes numerous runs during the day on several different combinations of slopes.

To calculate the altitude change on each of her runs Amber needs to use some trigonometry. Remembering the right angle unit she studied in algebra, specifically that the **sine** of an acute angle X in a right triangle is equal to the ratio of the side opposite that angle divided by the hypotenuse, or **sine X = opp/hyp**, she derived the equation to find the altitude change as:

a(altitude) = d(diagonal distance the lift travels) * sine A(angle of ascent).

She decided to write a program to make her calculations much easier.



Input: A number N representing the number of runs Amber makes in a day followed by N lines, one for each run. Each line will consist of a number L representing the number of lifts that Amber rides to get to the top of a slope or slopes for each run. L will be followed by L pairs of values D and A where D is the distance in meters travelled by each lift and A is the angle of ascent in degrees. All data will be separated by a single space.

Output: For each of Amber's runs print the run number, the total change in altitude for that run rounded to the nearest meter, followed by the unit label, in the exact format shown in the sample output below.

Sample Input:

```
3
1 300 25
3 500 28 1000 33 400 37
2 800 15 650 30
```

Sample Output:

```
Run #1 127 meters.
Run #2 842 meters.
Run #3 532 meters.
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